in amino acids 50-66 of SEQ ID NO:4 or SEQ ID NO:6, and a CDR3 as set forth in amino acids 99-113 of SEQ ID NO:4 or SEQ ID NO:6; and

a light chain variable domain amino acid sequence comprising a CDR3 as set forth in amino acids 88-96 of SEQ ID NO:3 or SEQ ID NO:6.

**9**. The recombinant antibody or antigen binding fragment of claim **1**, wherein said recombinant antibody or antigen binding fragment comprises the following CDR amino acids

amino acids 24-33 of SEQ ID NO:3 or SEQ ID NO:5 (a light chain region 1),

amino acids 49-55 of SEQ ID NO:3 or SEQ ID NO:5 (a light chain region 2),

amino acids 88-96 of SEQ ID NO:3 or SEQ ID NO:5 (a light chain region 3),

amino acids 31-35 of SEQ ID NO:4 or SEQ ID NO:6 (a heavy chain region 1),

amino acids 50-66 of SEQ ID NO:4 or SEQ ID NO:6 (a heavy chain region 2), and

amino acids 99-113 of SEQ ID NO:4 or SEQ ID NO:6 (a heavy chain region 3).

**10**. The recombinant antibody or antigen binding fragment of claim **1**, wherein the heavy chain comprises SEQ ID NO: 4 or SEQ ID NO:6, and/or the light chain comprises SEQ ID NO: 3 or SEQ ID NO:5.

**11**. The recombinant antibody or antigen binding fragment of claim **1**, wherein at least an amino acid corresponding to amino acid Y93 of the light chain defined in SEQ ID NO: 3 or amino acid F93 of the light chain defined in SEQ ID NO:5, and/or at least amino acids corresponding to amino acids Y33, Y107, Y109 and M111 of the heavy chain defined in SEQ ID NO: 4 or amino acids F33, F107, F109 and M111 of the heavy chain defined in SEQ ID NO: 5 bind T4 and/or halogenated bisphenol A.

**12**. The recombinant antibody or antigen binding fragment of claim **1**, wherein at least amino acids corresponding to amino acids Y107 and M111 of the heavy chain defined in SEQ ID NO: 4 or amino acids F107 and M111 of the heavy chain defined in SEQ ID NO: 6 are responsible for halogen binding.

**13**. The recombinant antibody or antigen binding fragment of claim **1**, wherein the recombinant antibody or antigen binding fragment comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5 and/or 6.

**14**. The recombinant antibody or antigen binding fragment of claim **1**, wherein the light chain comprises an amino acid sequence having at least 90% sequence identity to amino acids 1-109 of SEQ ID NO: 3 or SEQ ID NO: 5, and/or the heavy chain comprises an amino acid sequence having at least 90% sequence identity to amino acids 1-124 of SEQ ID NO: 4 or SEQ ID NO: 6.

**15**. The recombinant antibody or antigen binding fragment of claim **1**, wherein the antigen binding fragment is a single chain Fv (scFv) or Fab fragment.

**16**. (canceled)

**17**. (canceled)

**18**. (canceled)

**19**. (canceled)

**20**. A method of producing a recombinant antibody or an antigen binding fragment thereof for binding T4 thyroid hormone and for binding halogenated bisphenol A of claim **1**, wherein the method comprises introducing an expression vector comprising a nucleotide sequence that encodes the recombinant antibody or antigen binding fragment thereof of claim **1** into a host cell and growing the cell under conditions permitting production of the antibody or antigen binding fragment.

**21**. The method of claim **20**, further comprising recovering the produced antibody or antigen binding fragment.

**22**. A test kit comprising the recombinant antibody or antigen binding fragment of claim **1**.

**23**. (canceled)

**24**. (canceled)

**25**. (canceled)

**26**. (canceled)

**27**. A method for determining T4 thyroid hormone and/or halogenated bisphenol A concentration(s) in a sample, comprising allowing the recombinant antibody or antigen binding fragment of claim **1** to contact with the sample and thereafter determining the concentration of the T4 thyroid hormone and/or halogenated bisphenol A, respectively, in said sample.

**28**. (canceled)

**29**. (canceled)

**30**. (canceled)

**31**. An immunoassay comprising the recombinant antibody or antigen binding fragment of claim **1**.

**32**. (canceled)

**33**. (canceled)

**34**. (canceled)

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